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Customer No.: 00432

Claim Amendments

1. (currently amended) A beverage bottling plant for filling bottles with a liquid beverage filling material, said beverage bottling plant comprising:

a filling machine being configured to fill empty bottles with liquid beverage filling material;

a conveyer arrangement being configured and disposed to move empty bottles to said filling machine;

said beverage filling machine comprising a plurality of beverage filling positions, each beverage filling position comprising a beverage filling device for filling bottles with liquid beverage filling material;

said filling devices comprising an apparatus being configured to introduce a predetermined volume of liquid beverage filling material into the interior of bottles to a substantially predetermined level of liquid beverage filling material;

said apparatus being configured to introduce a predetermined volume of liquid beverage filling material comprising an apparatus being configured to terminate the filling of beverage bottles upon liquid beverage filling material reaching said substantially predetermined level in bottles;

a closing station being configured and disposed to close filled

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bottles;

a conveyer arrangement being configured and disposed to transfer filled bottles from said filling machine to said closing station;

a labeling station being configured and disposed to receive bottles to be labeled;

a conveyer arrangement being configured and disposed to convey bottles to said labeling station; and

said labeling station comprising:

a frame structure, said frame structure having an axis disposed vertically;

a turntable structure being configured and disposed to rotate about said vertical axis of said frame structure, said turntable structure having a peripheral region;

a drive arrangement being configured and disposed to rotate said turntable structure about said vertical axis of said frame structure;

a plurality of support tables being configured to support and to rotate a bottle;

said support tables being disposed at said peripheral region of said turntable structure;

each support table having an axis disposed vertically about

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which vertical axis a support table can rotate;

each support table comprising a drive arrangement being configured and disposed to rotate its corresponding support table about its vertical support table axis, to permit rotation of a bottle supported on a support table;

a plurality of modules comprising:

a first module comprising:

at least one camera being configured and disposed to produce an image representative of the actual rotational position of a bottle supported on its corresponding support table adjacent said first module and to output signals representative of the image representative of the actual rotational position of a bottle; and

a computer being configured and disposed to receive from said camera the output signals representative of the actual rotational position of a bottle, to compare the image representative of the actual rotational position with an image representative of a ~~preset~~ desired rotational position, and to output signals, to the drive arrangement of an adjacent

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support table, to energize the drive arrangement and thus to rotate to a first position said adjacent support table and a supported bottle;
a second module comprising:

at least one camera being configured and disposed to produce an image representative of the actual rotational position of a bottle supported on its corresponding support table adjacent said second module and to output signals representative of the image representative of the actual rotational position of a bottle;

a computer being configured and disposed to receive from said camera of said second module the output signals representative of the actual rotational position of a bottle, to compare the image representative of the actual rotational position with an image representative of a ~~preset~~ desired rotational position, and to output signals, to the drive arrangement of said support table adjacent said second module, to energize the drive arrangement and thus to rotate to a second position said support table

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adjacent said second module and a supported bottle;

and

said second position being of greater precision
than said first position;

a third module being configured and disposed to affix
a label to a bottle disposed in said second position on a
support table adjacent said third module;

a fourth module being configured and disposed to
print information on the label affixed to a bottle by said
third, labeling, module; and

a fifth module being configured and disposed to
inspect for the presence of a label on a bottle, and to
determine the position of a label on a bottle;
each of said modules comprising a first coupling structure;
a plurality of second coupling structures, each being

connected to said frame structure;

each of said first coupling structure structures being
configured to be connectable to and to be disconnectable from
~~its corresponding~~ at least one of said plurality of second
coupling ~~structure~~ structures;

each of said plurality of second coupling structures being

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configured to be removably connected to only one of said first coupling structures at a time; and

each module being configured, upon connection to a second coupling structure, to be disposed adjacent moving bottles supported on said support tables.

2. (currently amended) The beverage bottling plant according to claim 1, wherein:

each of said first coupling structure structures and a each of said second coupling structures are configured to permit quick connection and quick disconnection between a first coupling structure and a second coupling structure to minimize connection and disconnection time ~~structure together comprise a quick-connect and quick-disconnect structure;~~

each of said first coupling ~~structure structures~~ ~~of each module~~ is configured to be interchangeably connected to a plurality of said plurality of second coupling structures;

said third, labeling, module, said fourth, printing, module, said fifth, inspecting, module each comprise a computer configured to process signals;

each one of said plurality of modules comprises a bus system

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configured and disposed to transfer signals from and to a
corresponding module;

at least one of said modules comprises an arrangement to
generate light;

at least one of: said first, alignment, module, said second,
alignment, module, and said fifth, inspecting, module comprises at
least one of: (i) and (ii), wherein (i) and (ii) comprise:

(i) a plurality of sensors configured and disposed to sense
the presence a label affixed to a bottle; and

(ii) a plurality of sensors configured to sense the position
of a label affixed to a bottle;

one of: ~~(ii) and~~ (iii) and (iv), wherein ~~(ii) and~~ (iii) and (iv)
comprise:

~~(i)~~ (iii) at least one of: said first, alignment, module, said
second, alignment, module, and said fifth, inspecting, module is
configured to sense a deviation of the actual position of a label
affixed to a bottle by said third, labeling, module from a desired
position of a label which label is to be added on a bottle; and

~~(iii)~~ (iv) at least one of: said first, alignment, module, said
second alignment, module, and said fifth, inspecting, module is
configured to output signals to said third, labeling, module to

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minimize deviation of the actual position of a label affixed on a bottle by said third, labeling, module from the desired position of a label affixed on a bottle; and

said fifth, inspecting, module is configured to issue signals to said third, labeling, module to discontinue operation of said third, labeling, module.

3. (currently amended) The beverage bottling plant according to claim 2, comprising:

a conveyer arrangement configured and disposed to remove bottles comprising a defective label from said labeling station; and

said fifth, inspecting, module is configured to output signals to permit removal of bottles comprising a defective label with said removing conveyer arrangement from said labeling station;

at least one of: ~~(i) and (ii)~~ (v) and (vi), wherein ~~(i) and (ii)~~ (v) and (vi) comprise:

~~(i)~~ (v) at least one of: said first, alignment, module and said second, alignment, module comprises a plurality of sensors each being configured and disposed to sense the degree of rotation of a container disposed on a support table;

~~(ii)~~ (vi) a central control is operatively connected to said

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labeling station; and

one of: (a) and (b), wherein (a) and (b) comprise:

(a) one of: said first, alignment, module and said second, alignment, module is configured to correct, under instructions from said central control, the degree of rotation of a support table and a bottle supported thereon; and

(b) one of: said first, alignment, module and said second, alignment, module is configured to correct, under absence of instructions from said central control, the degree of rotation of a support table and a bottle supported thereon;

said fourth, printing, module comprises an arrangement comprising one of: laser printing apparatus; laser marking apparatus; ink jet printing apparatus; tampon printing apparatus; and screen printing apparatus.

4-6. (canceled)

7. (currently amended) A container filling plant for filling containers such as bottles and cans, said container filling plant comprising:

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a container filling station;
a container closing station; and
a container information adding station, such as, a labeling
station, configured to add information to containers, ~~such as, bottles~~
~~and cans~~, said information adding station comprising:

a plurality of supports, each being configured and disposed
to support a container thereon;

each support comprising an arrangement being configured
and disposed to adjust its corresponding support, to permit
adjustment of the position of a container supported on said
corresponding support;

a first module comprising a first sensor being configured
and disposed to output signals representative of the actual
position of a container disposed on a ~~predetermined~~ first
support, upon said ~~predetermined~~ first support being disposed in
a predetermined position with respect to said first module;

an arrangement being configured and disposed:

to receive output signals from said first sensor
representative of the actual position of a container disposed in a
predetermined position with respect to said first module ~~from~~
~~said first sensor~~,

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to compare the representation of the actual position with a stored representation of a desired position of a container,

to output signals to the adjusting arrangement of said ~~predetermined~~ first support to move said ~~predetermined~~ first support and the container supported thereon to the desired position;

at least one second module being configured to add information to a container disposed in the desired position on said ~~predetermined~~ first support;

each module comprising a first coupling structure;

said container information adding station comprising at least one second coupling structure;

~~each~~ said at least one second coupling structure being configured and disposed to receive output signals related to said first sensor to adjust said ~~predetermined~~ first support and the container supported thereon;

each of said first coupling ~~structure~~ structures being configured to be connectable to and to be disconnectable from ~~its corresponding~~ at least one of said at least one second coupling ~~structure~~ structures;

said at least one second coupling structure being

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configured to be connected to only one of said first coupling structures at a time; and

each module being configured, upon connection to a second coupling structure, to be disposed in a predetermined location with respect to moving containers supported on said supports.

8. (currently amended) ~~The container filling plant container information adding station~~ according to claim 7, comprising:

a third module being configured and disposed to inspect the information added on a container by said second, information adding, module.

9. (currently amended) ~~The container filling plant container information adding station~~ according to claim 8, wherein:

each of said first coupling structure structures and a said at least one second coupling structure are configured to permit quick connection and quick disconnection between a first coupling structure and a second coupling structure to minimize connection and disconnection time together comprise a quick-connect and quick-disconnect structure.

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10. (currently amended) ~~The container filling plant container~~
~~information adding station~~ according to claim 9, wherein:

said at least one second coupling structure comprises a plurality
of second coupling structures; and

each of said first coupling structure structures ~~of each module~~ is
configured to be interchangeably connected to a plurality of said
plurality of second coupling structures.

11. (currently amended) ~~The container filling plant container~~
~~information adding station~~ according to claim 10, wherein:

each module comprises a computer configured to process
signals; and

each module comprises a bus system configured and disposed to
transfer signals from and to a corresponding module.

12. (currently amended) ~~The container filling plant container~~
~~information adding station~~ according to claim 11, wherein:

at least one of said modules comprises an arrangement to
generate light.

13. (currently amended) ~~The container filling plant container~~

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~~information adding station~~ according to claim 12, comprising:

a fourth module; and

at least one of: said second, information adding, module and
said fourth module is configured and disposed to dispose information
on a container.

14-19. (canceled)

20. (currently amended) The container filling plant ~~container~~
~~information adding station~~ according to claim 19, ~~wherein~~ 13, wherein:

one of: said first, alignment, module and said third, inspecting,
module comprises at least one of: (a), (b), (c), (d) and (e) wherein
(a), (b), (c), (d), and (e) comprise:

(a) at least one camera configured and disposed to
produce an image of a container being viewed by said at least
one camera;

(b) a plurality of sensors configured and disposed to sense
the presence of information added on a container;

(c) a plurality of sensors configured to sense the position
of information added on a container;

(d) at least one of: said first, alignment, module and said

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third, inspecting, module is configured to sense a deviation of the actual position of information added on a container by said second, information adding, module from a desired position of information which information is to be added on a container; and

(e) at least one of: said first, alignment, module and said third, inspecting, module is configured to output signals to said second, information adding, module to minimize deviation of the actual position of information added on a container by said second, information adding, module from the desired position; said third, inspecting, module is configured to issue signals to said second, information adding, module to discontinue operation of said second, information adding, module;

at least one of said at least one second, information adding, module comprises a labeling module configured and disposed to affix a label to a container;

a conveyer arrangement configured and disposed to remove containers comprising a defective label from said container information adding station;

said third, inspecting, module is configured to output signals to permit removal of containers comprising a defective label with said removing conveyer arrangement from said container information adding

station;

one of: (f) and (g), wherein (f) and (g) comprise:

(f) at least said first, alignment, module comprises a plurality of sensors each being configured and disposed to sense the degree of rotation of a container disposed on a support; and

(g) a central control is operatively connected to said container information adding station; and

one of: (i) and (ii), wherein (i) and (ii) comprise:

(i) said first, alignment, module is configured to correct, under instructions from said central control, the degree of rotation of a support and a container supported thereon; and

(ii) said first, alignment, module is configured to correct, under absence of instructions from said central control, the degree of rotation of a support and a container supported thereon; and

said fourth, printing, module comprises an arrangement comprising one of: laser printing apparatus; laser marking apparatus; ink jet printing apparatus; tampon printing apparatus; and screen printing apparatus.

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21. (new) A container filling plant for filling containers such as bottles and cans, said container filling plant comprising:

- a container filling station;

- a container closing station; and

- a labeling station comprising:

 - a machine frame structure;

 - a turntable and a turntable drive being configured and disposed to rotate said turntable;

 - a plurality of support table being disposed on and about the periphery of said turntable and being configured to support containers to be labeled;

 - at least one container processing module comprising at least one of:

 - a labeling module being configured to apply labels to containers;

 - an inspection module being configured to inspect containers;

 - a printing module being configured to print at least one of text and images on a container body or container label; and

 - an alignment module being configured to monitor

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alignment of containers;

said at least one container processing module comprising a replaceable unit; and

said at least one container processing module being configured to be physically mounted on and connected to said machine frame structure, and being configured to be physically dismounted and disconnected from said machine frame structure.

22. (new) The container filling plant according to Claim 21, wherein said at least one container processing module comprises a self-contained module which comprises mechanical and/or electronic components sufficient to operate said at least one container processing module.

23. (new) The container filling plant according to Claim 22, wherein:

said at least one container processing module comprises a plurality of modules;

said machine frame structure comprises a plurality of module interfaces; and

each of said modules and each of said interfaces are configured

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to permit physical mounting and connection of said modules at different positions on said machine frame structure, and are configured to permit physical dismounting and disconnection of said modules from said machine frame structure.

24. (new) The container filling plant according to Claim 23, wherein each of said modules comprises:

- a computer to control operation of its module; and
- a bus-system for transfer of control information;

25. (new) The container filling plant according to Claim 24, wherein:

- at least one of said modules comprises an arrangement to provide light; and
- said inspection module comprises at least one camera.

26. (new) The container filling plant according to Claim 25, wherein:

- said inspection module comprises sensors that sense labels on containers; and

- said inspection module comprises sensors to sense the position

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of a label.

27. (new) The container filling plant according to Claim 26,
wherein:

the deviation of the actual position of the label from its desired position is utilized to at least one of: influence the labeling process and disrupt the labeling process; and

said inspection module comprises a removal unit for removing incorrectly labeled containers.

28. (new) The container filling plant according to Claim 27,
wherein:

said alignment module comprises at least one camera; and

said alignment module comprises sensors that sense the degree of rotation of the containers.

29. (new) The container filling plant according to Claim 28,
wherein:

the alignment deviation that is determined by said alignment module can be utilized to correct, under either utilization or avoidance of the control of the machine, the degree of rotation of the support

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table that is rotatable about its vertical axis; and

said printer module is configured to print using at least one of the following printing methods: laser printing/laser marking, ink jet printing, tampon printing or sieve printing.